

CONTRASTING RESULTS IN ASSEMBLING  
EXPERIMENTS USING *ORGYIA THYELLINA*  
BUTLER, *O. RECENS* HÜBNER AND  
*O. ANTIQUA* L.

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In a previous paper (Clarke, 1979) it was reported that females of the Japanese Vapourer moth *Orgyia thyellina* readily assembled males of *O. antiqua* in this country. Matings took place and eggs were laid but none hatched, though fertile offspring from this mating are reported in the literature. On the other hand we found that the reciprocal cross, female *O. antiqua* X male *thyellina*, was fertile, and hybrid insects were obtained.

The next step was to find out whether there was similar pheromone activity between *O. thyellina* females and *O. recens* males and whether species hybrids could be obtained. Here the difficulty was that *O. recens* has become rare in UK and at first no definite reports of it could be obtained during the past few years in its usual localities in north-east England. However, in June 1981 one of us (A.W.) contacted C. A. C. telling him that he and a colleague had found a few larvae of *O. recens* near Doncaster, and this meant that a locality had been identified where assembling tests could be carried out. The third member of the team (S.G.), who was found (through the Institute of Biology) to be interested in the genus *Orgyia*, collected from C. A. C., at his home near Liverpool, many virgin females of *O. thyellina*, together with cocoons and large larvae, and took them to Doncaster so that detailed experiments could be made. A.W. and S.G. suspended the virgin females in two hanging cages in the hedgerows of a field near the sites on which the *O. recens* larvae had been found. Virgin *O. recens* females derived from the larvae mentioned earlier were also exposed and the table gives the details of the tests carried out over 44 days.

It will be seen that *O. recens* females assembled *O. recens* males, some matings took place and fertile eggs were subsequently laid. Conversely, *O. thyellina* females by themselves never assembled *O. recens* males, though the concentration of the pheromone must have been high since there were always 20 or more virgin females in the assembling cages. Also matings between *thyellina* females and *recens* males were not obtained when the moths were put together in a cage, even though the females were seen to "call". The non-assembling of *O. recens* by *thyellina* might appear to be at variance with the work of Priesner (Priesner, 1975) who found full reciprocity of pheromone activity in the genus *Orgyia*, using the electro-antennogram technique. However, there is no

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Locality number	Dates 1981	Virgin females present <i>O. thy.</i> , (= <i>O.t.</i> ) always in large nos. 20-30 ♀♀	Approx. times	Weather conditions	Results	Remarks
1	21.7	—	15.30-17.30	Cool, windy, a little sun, a little rain.	Nil assembled	During the experimental period four virgin <i>O. recens</i> ♀♀ (derived from wild larvae) were exposed at locality 1 in open pill-boxes. Of the 4 females two laid fertile eggs. They had evidently assembled <i>O. recens</i> males when not under observation. One female did not lay and the other disappeared.
1	24.7	—	?	"	Nil assembled	
1	25.7	—	14.30-16.15	"	Nil assembled	
1	27.7	<i>O.t.</i>	13.00-15.30	Sunny, Warm, light breeze	Nil assembled	
2	29.7	<i>O.t.</i>	13.00-17.00	"	4-0 <i>recens</i> ♂♂ assembled	<i>O. recens</i> box on ground adjacent to <i>thyellina</i>
1	30.7	<i>O.t.</i>	13.15-13.45	"	Nil assembled	♀♀ moved to locality 3 at 13.45
3	30.7	<i>O.t.</i>	14.00-17.00	"	Nil assembled	
2	1.8	<i>O.t.</i>	13.30-16.00	"	Nil assembled	
2	2.8	—	13.30-17.30	"	1 ♂ <i>O. recens</i> assembled	
4	4.8	<i>O.t.</i>	13.15-17.15	"	Nil assembled	
2	11.8	<i>O.t.</i>	13.15-17.00	"	Nil assembled	
2	12.8	<i>O.t.</i>	13.00-16.00	"	1 <i>antiqua</i> ♂ assembled	Very early date for <i>antiqua</i> in S. Yorkshire.
1	10.20	<i>O.t.</i>				

evidence that *O. recens* assembles *antiqua*, or *vice versa*, and it would be highly disadvantageous to both species if this were to happen. Natural selection therefore is likely to have evolved much more sensitive differences than those detected by the antennogram, and it is not therefore unexpected that *O. recens* behaves differently from *antiqua*. Furthermore, although *antiqua* and *recens* superficially resemble each other closely, yet they have different chromosome numbers (Robinson, 1971), the haploid number in *thyellina* being 11 and in *recens* 30 (in *antiqua* it is 14).

Our findings are only tentative since *O. recens* remains a scarce insect even in the Doncaster region, but our results strongly suggest that *O. thyellina* behaves quite differently with respect to assembling *O. recens* from what we and others have found when the males are *antiqua*. It would be most interesting to carry out electro-antennogram studies on the three species.

Since large stocks of *O. recens* larvae have been obtained from the Doncaster pairings and we also have many *thyellina* larvae it should be possible to repeat the experiments on a bigger scale in 1982.

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#### References

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**A Label List of Butterflies – North, Western and Southern Europe** by P. W. Cribb. Cover and 20 leaves. Amateur Entomologists' Society Pamphlet No. 11. Revised 1981. Obtainable from A. E. S. Publications, 4 Steep Close, Green Street Green, Orpington, Kent BR6 6DS. Price £1.50 plus 20p. post.

This checklist covers those species in the latest (1980) edition of Higgins and Riley, *A Field Guide to the Butterflies of Britain and Europe*, apart from North African species.

Some sub-species and forms have been included, but many others omitted including a number of British sub-species. English names are given, mainly in accordance with those in Higgins and Riley, and the years of original descriptions have been included after the authors' names for genera, some species and some sub-species. The list appears remarkably free from misprints, the only one noticed being on page 9 where Kudrna has been misspelt Kurdna.

Printed on one side of a page only so that it may be cut up, the list has been designed mainly for cabinet use.